Space Weather Forecast

Issued on Wednesday, 15 June 2022 at 13:30 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of G1 (Minor Storm) conditions Day 1 and 2 (15th and 16th). Chance of M-class flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity was Low in the last 24 hours, with several mid-high level Common-class flares. There are seven numbered sunspot regions on the visible disc, the largest and most complex of which is a moderately large, complex region in the southwestern quadrant which gave the largest flare of the period. No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

Solar Wind / Geomagnetic Activity: The solar wind speed was at slightly elevated levels, then increased to elevated levels after 15/0400UTC. The Total Interplanetary magnetic field strength was weak but sharply increased to moderate strength at the same time. The important north-south component, Bz, then fluctuated more significantly, with some short periods of moderate southward orientation. Geomagnetic activity was largely Quiet, before becoming mostly Unsettled to Active from the 15/0300-0600UTC interval. The above enhancements were most likely associated with the arrival of the 13th June CME.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was very slightly above background levels, but with no solar radiation storms thresholds reached.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to be mostly Low, with a chance of isolated Moderate flares, most likely from the most complex spot group in the southwest quadrant.

Solar Wind / Geomagnetic Activity: The anticipated arrival of the 13th June CME was observed at L1 at around 15/0400UTC. Solar winds briefly peaked into strong levels, and have since levelled at upper elevated strength. No other CMEs are currently expected to affect Earth during the period.

Solar winds may erratically decrease later today (15th), before further increases in the solar wind are anticipated with the onset of a coronal hole early on the 16th and then a further coronal hole on the 17th, continuing into the 18th. Mainly elevated winds would be expected from the 16th onwards.

Geomagnetic activity is likely to be in the range Quiet to Active, with a chance of an isolated G1/Minor Storm interval, this most likely on Days 1 and 2 (15th and 16th), with a reducing risk thereafter.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy

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protons) is forecast to remain at background, or just above background levels during the period, with a slight chance of an S1 or greater event occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	50	30	10
Strong	G3	No	5	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	40	40	40	40
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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